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Frank J. Effenberger

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HAMILTON, BROOK, SMITH & REYNOLDS, P.C.  
530 VIRGINIA ROAD  
P.O. BOX 9133  
CONCORD, MA 01742-9133

EXAMINER

NGUYEN, CHAU M

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/827,807

Applicant(s)

EFFENBERGER ET AL.

Examiner

Chau M Nguyen

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 7. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 4, 5, 18, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Tochio (U.S. Pat. No. 6,563,613 B1).

As claim 1, Tochio discloses an communications network (fig. 1A) comprising:  
a passive optical network (PON) (13A) (col. 1, lines 14-26);  
plural user terminals (12<sub>1</sub>, ..., 12<sub>N</sub>) coupled to the PON, each user terminal having an optical transmitter (31, fig. 3) for transmitting an upstream signal in an optical channel dedicated to the user terminal (col. 7, line 30-31) and an optical receiver (32, fig. 3) for receiving a shared downstream signal in a shared optical channel (col. 7, lines 15-17);  
a central terminal (11) coupled to the PON and having an optical transmitter (21, fig. 2) for transmitting the shared downstream signal (col. 5, lines 51-52) and plural

optical receivers ( $25_1, \dots 25_N$ ) each receiving one of the dedicated upstream signals (col. 6, lines 11-15).

As claim 4, Tochio (fig. 3) shows a WDM filter (35) for isolating the shared downstream channel for reception at the user terminal optical receiver (col. 7, lines 27-28).

As claim 5, Tochio discloses an optical communications network of claim 1 wherein there are N user terminals ( $N > 1$ ) (fig. 1) and wherein the central terminal optical transmitter transmits the shared downstream signal in a shared optical channel at wavelength (denoted by  $\lambda_0$ ) (col. 5, lines 5-6) and the user terminal optical transmitters transmit the upstream signals in dedicated optical channels at dedicated wavelengths (denoted by  $\lambda_1 - \lambda_N$ ) (col. 6, lines 20-21).

As claim 18, Tochio discloses a communications network, a method of communications comprising:

coupling plural user terminals ( $12_1 - 12_N$ , fig. 1) and a central terminal (11) to a passive optical network (PON);

at each user terminal (see fig. 3), transmitting an upstream signal in an optical channel dedicated to the user terminal and receiving a shared downstream signal in a shared optical channel;

at the central terminal (see fig. 2), transmitting the shared downstream signal and receiving one of the dedicated upstream signals at a plurality of optical receivers.

As claim 19, Tochio discloses the method of claim 18 wherein there are N user terminals ( $N > 1$ ) and wherein the central terminal transmits the shared downstream signal in a shared optical channel at wavelength (denoted by  $\lambda_0$ ) (col. 5, lines 5-6) and the user terminals transmit the upstream signals in dedicated optical channels at dedicated wavelengths (denoted by  $\lambda_1 - \lambda_N$ ) (col. 6, lines 20-21), respectively.

3. Claims 1, 5, 6, 12, 13, and 18-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Masucci et al. (Hereinafter "Masucci") (U.S. Pat. No. 6,592,272 B1).

As claim 1, Masucci discloses a communications network (100, Fig. 5) comprising:

a passive optical network (PON) (114);

plural user terminals (remote terminals) (112-2, ... 112-9) coupled to the PON, each user terminal (detailed in figure 11B) having an optical transmitter (250) for transmitting an upstream signal in an optical channel (such as  $\lambda_1$ ) dedicated to the user terminal, and an optical receiver (240) for receiving a shared downstream signal (such as  $\lambda_D$ ) in a shared optical channel;

a central terminal (110) coupled to the PON (detailed in figure 11A) and having an optical transmitter (206) for transmitting the shared downstream signal and plural

optical receivers (210-1 ... 210-3) each receiving one of the dedicated upstream signals.

As claim 5, Masucci discloses a communications network wherein there are N user terminals ( $N > 1$ ) and wherein the central terminal optical transmitter transmits the shared downstream signal in a shared optical channel at wavelength  $\lambda_D$  (col. 6, line 52-53) and the user terminal optical transmitters transmit the upstream signals in dedicated optical channels at dedicated wavelengths  $\lambda_1$  to  $\lambda_N$  (col. 6, lines 59-62), respectively.

As claims 6, 12 and 13, Masucci discloses the range of wavelengths (col. 6, lines 24-25).

As claim 18, Masucci, in a communication network, discloses a method of communication comprising:

coupling plural user terminals and a central terminal to a passive optical network (PON) (col. 2, lines 37-41);

at each user terminal, transmitting an upstream signal in an optical channel dedicated to the user terminal and receiving a shared downstream signal in a shared optical channel (col. 6, lines 59 –62);

at the central terminal, transmitting the shared downstream signal and receiving one of the dedicated upstream signals at a plurality of optical receivers (col. 6, lines 52-54).

As claim 19, Masucci discloses a method of communications wherein there are N user terminals ( $N > 1$ ) and wherein the central terminal optical transmitter transmits the shared downstream signal in a shared optical channel at wavelength (denoted by  $\lambda_D$ ) (col. 6, line 52-53) and the user terminal optical transmitters transmit the upstream signals in dedicated optical channels at dedicated wavelengths (denoted by  $\lambda_1$  to  $\lambda_N$ ) (col. 6, lines 59-62), respectively.

As claims 20 and 21, Masucci discloses the range of wavelengths (col. 6, lines 24-25).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masucci as applied to claim 1 above, in view of Wagener et al. (Hereinafter "Wagener") (U.S. Pat. No. 6,631,222 B1.)

As claims 2-4, Masucci discloses an optical communication network as described in the above section, in that Masucci shows the central unit (fig. 11A) including a

Demux (208) for separating the dedicated upstream channels for reception at the plural central terminal optical receiver. Masucci fails to show Demux (208) is a WDM filter array and wherein, WDM filter array comprising a thin-film filter device. However, Wagener shows the use of a WDM filter array for separating the dedicated channels for reception at the plural terminal optical receivers (col. 3, lines 20-31), and wherein, WDM filter array comprising a thin-film filter device (col. 4, line 63 - col. 5, line 4). Therefore, it would have been obvious to one of ordinary in the art at the time of the invention to use WDM filter array as provided by Wagener into the optical communication system of Tochio in order to separate the dedicated upstream channels for reception at the plural central terminal optical receivers. By doing this, as one would have been motivated, the system will be much less expensive to manufacture, and further, the insertion loss characteristics of the system will be improved (Wagener, col. 3, lines 13-17).

6. Claims 7, 8-12, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masucci as applied to claim 1 above, in view of Waarts et al. (Hereinafter "Waarts") (U.S. Pat. No. 6,212,310 B1).

As claim 7, Masucci discloses an optical communication network of claim 1 wherein the central terminal optical transmitter transmits the shared downstream signal in a shared optical channel at wavelength (denoted by  $\lambda_D$ ) and plurality of user terminals. Masucci fails to show wherein the plural user terminals include a first group of user terminals each having an optical transmitter that includes a coarse WDM laser and



a second group of user terminals each having an optical transmitter that includes a dense WDM laser.

However, Waarts (fig. 13) discloses an optical system, wherein the WDM system is configured with two different groups of lasers (col. 5, lines 20-23). Therefore, it would have been obvious to person of ordinary skill in the art at the time of the invention to employ the two different groups of laser as taught by Waarts into the optical system of Masucci in order to expand the capacity of the system. The one of ordinary skill would have been motivated for doing this since by using the two different groups of lasers, the overall gain of the system is increased (col. 5, lines 23-27).

Further, both Masucci and Waarts do not specify the type of lasers (such as coarse lasers and/or dense lasers) as appeared in the claim invention. However, the type of laser would have been obvious within the level of ordinary skill in the art, and it is a matter of design choice to select an appropriated laser that produces a designed wavelength.

As claims 8-12, the optical communication system as a combination of Masucci and Waarts, as applied to the claim 7, in that , Masucci discloses the wavelength range from 1000 nm to 1600 nm (Masucci, col. 6, lines 24-25).

As claim 15, Masucci discloses the central terminal (110) is functionally working with SONET network (col. 9, lines 34-39). Masucci does not clearly show the central terminal includes an SDH/SONET multiplexer, the user terminals each include an

SDH/SONET add-drop multiplexer and the shared downstream signal is a static time division multiplex signal. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to complete the system by installing a SONET multiplexer at the central terminal and an SONET add-drop multiplexer at each user terminals in order to perform the communication based on the time division multiplexing data signal, that is in synchronous mode as mentioned by Masucci (col. 3, line 52-53).

7. Claims 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masucci as applied to claim 1 above, in view of Lahat et al. (Hereinafter "Lahat") (U.S. Pat. No. 6,233,074 B1).

As claim 16, Masucci discloses an optical communication network as disclosed in the rejection claim 1 above, in that Masucci does not show the communications network of claim 1 wherein the central terminal and the user terminals each include an ATM switch and framer, the user terminals each include an ATM framer and the shared downstream signal is a dynamic ATM time division multiplex signal. However, Lahat teaches the use of an ATM switch (204, Fig. 8, col. 12, line 26) and frame (col. 1, lines 14-17) for transferring data signal between source and destinations. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to apply the teaching of Lahat on the use of an ATM switch and frame, and employing those inventive ideas into the optical system of Masucci in order to

communicate between the terminal ends. One having ordinary skill would have been motivated for doing this since a ATM protocol might arise from customer demands, an ATM switching and frame should be utilized to enable a plurality of protocols to be used simultaneously in the network (Lahat, (col. 7, lines 9-11).

As claim 17, Lahat discloses the features of Ethernet switch and the Ethernet time division multiplexing signal (col. 5, lines 52-55).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Touma (U.S. Pat. No. 6,108,112) is cited to show method and apparatus for failure recovery in Passive optical network.

Wright et al. (U.S. Pat. No. 6,411,410 B1) is cited to show wavelength-division multiplexing in passive optical network.

Macsuccci et al. (U.S. Pat. No. 6,498,667 B1) is cited to show method and system for packet transmission over passive optical network.

Jayaraman (U.S. Pat. No. 6,122,417) is cited to show WDM Mux-Demux using Fabry-Perot filter array.

Ichikawa (U.S. Pat. No. 6,031,645) is cited to show bi-directional communications subscribe transmission system using a single wavelength.

Cohan (U.S. Pat. No. 5,321,541) is cited to show passive optical network with broadband upgrade.

Bohn et al. (U.S. Pat. No. 5,311,344) is cited to show a bidirectional lightwave transmission system


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau M. Nguyen whose telephone number is 703-305-8965. The examiner can normally be reached on Mon-Fri from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4726. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

C.M.N.

Jan. 30, 2004

  
JASON CHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600